



Commercial & Industrial (C&I) Energy Efficiency Requirements Working Group

City of Boulder
Friday, November 14, 2014



Agenda

Investing in Better Buildings



- ☐ Introductions & Ground Rules
- ☐ Review other cities' ordinances
- ☐ ENERGY STAR Portfolio Manager Demo
- ☐ Energy use data access
- ☐ Discussion on resource needs, trainings and support needed for compliance



Ground Rules

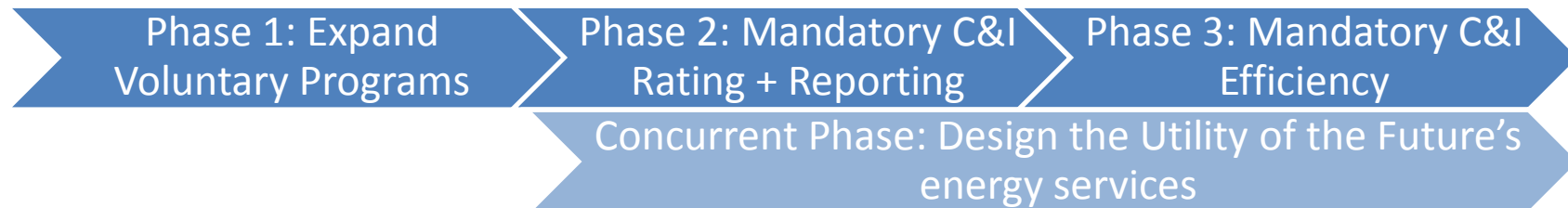


- One at a time
- Build on each other's idea
- Question assumptions
- Not: “won’t work”, but “could work *if...*”
- Don’t get stuck in the weeds
- Put away electronic devices



Past Efforts: Phased Approach

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1. ***Voluntary Programs***; continue incentive based programs and services to drive energy efficiency improvements in existing buildings.
2. ***Mandate Rating and Reporting***; require property owners to rate their buildings' energy performance and report/disclosure the rating.
3. ***Mandate Prescriptive Measures or a Performance Standard over time***; phase in the most effective requirements that will improve the buildings' efficiency and energy performance.



Commercial Building Energy Rating + Reporting Pilot Program

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Attachment A

City of Boulder



Commercial Building Energy Rating & Reporting Pilot Program Report

Prepared by McKinstry

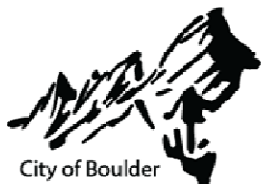


BOULDER, COLORADO
26 FEBRUARY 2013



Consultant's Recommendations:

- ✓ Support a voluntary rating + reporting program
- ✓ Investigate better ways to access whole building energy data
- ✓ Provide education and training
- ✓ Investigate installing sub-meters and potentially offsetting some of the cost of purchase and installation
- ✓ Target larger buildings (45% of the commercial sf is found in buildings >50,000 sf)
- ✓ Consider implementing prescriptive energy standards
- ✓ Continue to work with both building owners and tenants (partnering with programs such as *EnergySmart*) to gather energy data and develop new incentive or regulatory programs



Boulder's Private Sector Commercial Buildings

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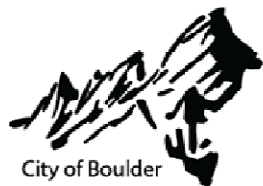
Size Category (SQFT)	Total SQFT	Number of Buildings	% of Total SQFT	% Total Number of Buildings
<1,000	17,077	22	0.1%	1.4%
1,000-4,999	1,094,660	371	3.4%	24.2%
5,000-9,999	2,268,112	318	7.0%	20.7%
10,000-19,999	5,276,787	375	16.3%	24.4%
20,000-29,999	4,088,380	166	12.6%	10.8%
30,000-39,999	2,986,804	87	9.2%	5.7%
40,000-49,999	2,210,437	50	6.8%	3.3%
50,000 and above	14,529,366	147	44.7%	9.6%
TOTAL	32,471,623	1,536		

Building Type	Bldgs (#)	Bldgs (%)	Rentable Area (SQFT)	Rentable Area (%)	Avg Bldg SQFT
Flex	161	10.5%	5,470,144	16.8%	33,976 sqft
Industrial	247	16.1%	6,053,035	18.6%	24,506 sqft
Commercial	1,128	73.4%	20,948,444	64.5%	18,571 sqft
Total	1,536		32,471,623		

Source: CoStar, 10/10/2014

Includes: Existing Properties Only

DOES NOT INCLUDE: Multi-Family



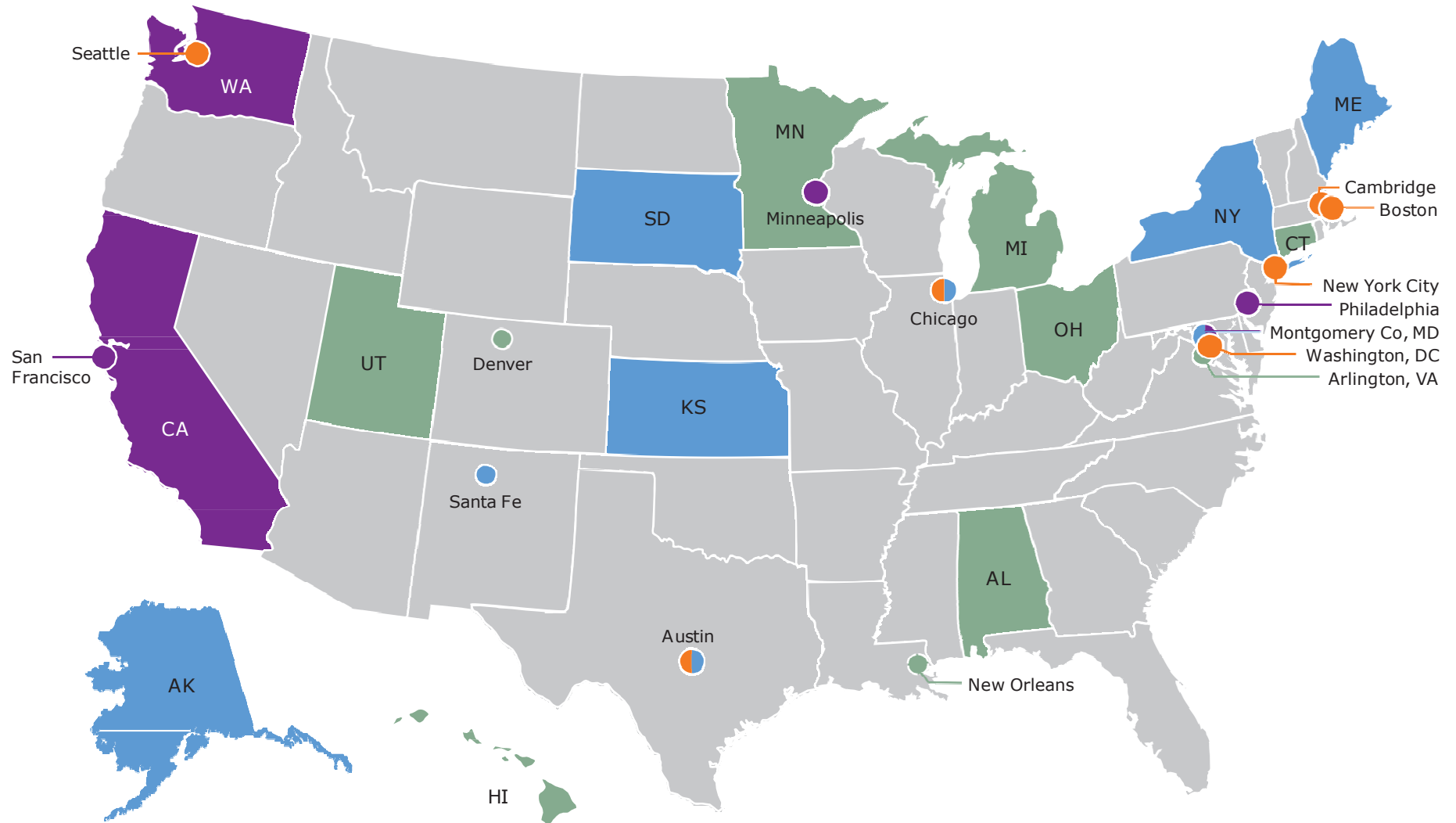
Meeting 2: Nov. 14, 2014



WHAT ARE OTHER CITIES DOING? WHAT ARE THE COMPONENTS OF AN ORDINANCE?



U.S. Building Benchmarking and Transparency Policies



- Commercial policy adopted
- Commercial & multifamily policy adopted
- Public buildings benchmarked
- Single-family transparency adopted

C&I Rating +Reporting Ordinances

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City	Date Enacted	Date Effective	Gov't/ Comm	Disclosure ¹	Energy Efficiency?
Austin	Nov 2008	June 2011	10K SF+	B, T, G	Audits
Boston	May 2013	May 2014	All/35K SF+	P, G	Audits
Cambridge	July 2014	Dec 2014	25K SF+	P, G	---
Chicago	Sept 2013	June 2014	50K SF+	P, G	---
District of Columbia	July 2008	April 2013	10K/ 50K SF+	P, G	---
Minneapolis	Jan 2013	May 2014	25K/ 50K SF+	P, G	---
NYC	Dec 2009	Aug 2011	10K/ 50K SF+	P, G	Audits, RCx, Lighting, Sub-metering
Philadelphia	June 2012	Oct 2013	50K SF+	P, G, B, L	---
San Francisco	Feb 2011	Oct 2011	10K SF+	P ² , G, T, B, L ³	Audits, RetroCx
Seattle	Jan 2010	Oct 2011	10K SF+	B, G, T, L	---

¹ P = public, G = government, B = buyers, T = tenants, L = leasers & lenders

² Discloses summary of compliance, but not building energy use

³ CA's statewide initiative, AB 1103, requires buildings to disclose energy performance at point of transaction

“Basic” Ordinance Example: Seattle

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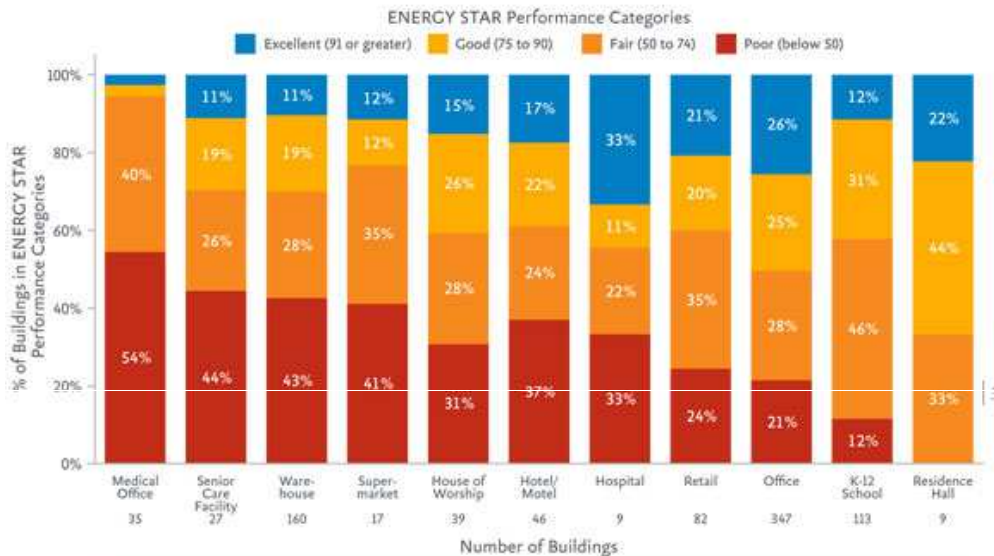


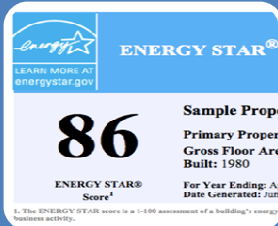
Figure 13: Percent of Buildings in each ENERGY STAR Score Performance Category by Building Type (2012)

- Annual benchmarking reported to the city
 - April 1st of each year
 - $\geq 10,000$ sf
 - Portfolio Manager Statement of Energy Performance (SEP)
- Data must be disclosed when requested to:
 - current tenants,
 - prospective tenants,
 - prospective buyers, and
 - prospective lenders (financing or refinancing)



“Advanced” Ordinance Example - NYC

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Local Law 84: Benchmarking (in progress now)

- annual requirement to benchmark energy and water use
- benchmarking data made available to the public



Local Law 87: Energy Audits & Retro-Cx (phasing in 2013-2022)

- Energy audit and retro-commissioning once every 10 years



Local Law 88: Lighting & Sub-metering (2025)

- lighting in non-residential spaces must meet code (LL85)
- large commercial tenants provided with sub-meters and monthly energy statements

What will the ordinance cover?

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- Council has directed staff to develop options for mandatory rating + reporting and efficiency requirements for commercial and industrial buildings.
- Options will be provided for:

Which buildings
(size/type) will
be covered?

Phasing/Timing

Exemptions

Disclosure of
Energy Use
Information

Enforcement

Process for
handling multi-
use buildings

Recognition &
Incentives

Efficiency
Requirements



Typical Building Types/Phasing

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Buildings:

- Gov't buildings (>10K-50K sf)
- Non-residential buildings (>20K-50K sf)
- Some include multi-family residential units

Phasing:

- FIRST: Gov't and largest buildings (>25-50K sf)
- LATER PHASES: smaller buildings and efficiency
- Usually a 1 year grace period before enforcement/fines



Exemptions



Typical Exemptions

- Low occupancy or unoccupied buildings
- Financial hardship/distress
- New Construction (< 1 year operation)
- High performing buildings (efficiency only)

Industrial (4 Cities)

- Consider sub-metering out production equipment
- Consider reporting just total energy use, or energy per unit production



Disclosure Spectrum



City	Disclosed to ?	Building Info	EUI	GHG	ENERGY STAR Rating	Water Data
Austin	B, T, G		✓		✓	
Boston	P, G	✓	✓	✓	✓	✓
Cambridge	P, G	✓	✓	✓	✓	
Chicago	P, G				✓	
District of Columbia	P, G	✓	✓	✓	✓	
Minneapolis	P, G	✓	✓	✓	✓	✓
NYC	P, G	✓	✓	✓	✓	✓
Philadelphia	P, G, B, L	✓	✓		✓	
San Francisco	P ² , G, T, B, L ³	✓	✓	✓	✓	✓
Seattle	B, G, T, L		✓		✓	

¹ P = public, G = government, B = buyers, T = tenants, L = leasers & lenders

² Discloses summary of compliance, but not building energy use

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What does Disclosure look like?

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- Austin (not publically disclosed)
- San Fran [data](#) (compliance info only)
- Seattle (aggregate data [1](#),[2](#))
- NYC (ALL raw [data](#))
- Philly (ALL raw [data](#))
- DC (ALL raw [data](#) + [web interface](#))



Seattle Data

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Type of Building	2012 Annual Energy Use Intensity (Site EUI in kbtu/sf)					Number of Buildings*	Year Built (Median)	Building Size (Median sf)	EPA ENERGY STAR (Median)
	Median	Lowest Use (1st Quartile)	Medium-Low (2nd Quartile)	Medium-High (3rd Quartile)	Highest Use (4th Quartile)				
Multifamily Housing	31.9	≤ 25	26 - 32	33 - 43	≥ 44	1309	1981	39,212	NA
Office	59.8	≤ 42	43 - 60	61 - 80	≥ 81	419	1972	64,858	75
Other	61.7	≤ 33	34 - 62	63 - 115	≥ 116	240	1960	40,854	69
Warehouse	30.4	≤ 16	17 - 30	31 - 52	≥ 53	228	1962	43,080	56
K-12 School	43.5	≤ 36	37 - 43	44 - 55	≥ 56	114	1962	55,427	72
Retail	74.1	≤ 42	43 - 74	75 - 106	≥ 107	94	1967	53,500	68
Hotel/Motel	73.1	≤ 53	53 - 73	74 - 97	≥ 98	52	1988	107,117	68
House of Worship	42.0	≤ 26	27 - 42	43 - 54	≥ 55	45	1952	26,374	63
Medical Office	82.9	≤ 62	63 - 83	84 - 112	≥ 113	41	1984	66,588	47
Senior Care Facility	65.6	≤ 48	48 - 66	67 - 104	≥ 105	29	1995	94,370	51
Supermarket/Grocery	215.4	≤ 202	203 - 215	216 - 269	≥ 270	17	1996	46,280	59
Residence Hall/Dorm	47.3	≤ 33	34 - 47	48 - 82	≥ 83	11	1960	34,560	77
Hospital	166.5	≤ 122	123 - 167	168 - 206	≥ 207	9	1961	879,000	67



Enforcement

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City	Fines (typically 30-45 days after written notice, if not addressed)	Compliance Rate (%)
Austin	Up to \$500 (Class C misdemeanor), \$2,000 (if criminal negligence)	76% for Tier 1
Boston	\$200 per day (>50,000 sf) \$75 per day (35,000-49,999 sf)	pending
Cambridge	\$300/day fine after 1st written warning	pending
Chicago	\$100 for the first violation \$25/day that the violation continues	pending
District of Columbia	\$100/day	83%
Minneapolis	Daily fine TBD, pursuant to Chapter 2 and the schedule of civil fines	pending
NYC	\$500 for 1 st violation \$500/quarter with a maximum of \$2,000 for continued violations.	75%
Philadelphia	\$300 fine for the 1st 30 days, and then \$100/day	90%
San Francisco	\$100 /day, up to a maximum of \$2,500 per violation (≥25,000 sf) \$50 /day, up to a maximum of \$1,500 per violation (<25,000 sf)	79%
Seattle	\$1,000/quarter, \$4,000 per year (≥50,000 SF or greater) \$500/quarter, \$2,000 per year (20,000 to 49,999 SF) +Disclosure Request violation: \$150 fine, \$500 fine for subsequent violations	93%



Process for mixed-use buildings

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- Min. gross floor area (sf or %) that must be commercial
- EPA's Portfolio Manager guidelines
- ENERGY STAR rating requirements
 - >50% of gross floor area (GFA) must be one eligible space type
 - If >50% of a space is retail, not eligible
 - Cannot exceed 10% of total GFA for “other” category
 - Cannot exceed 10% of total GFA for multifamily housing



Recognition/Incentives


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- Voluntary Benchmarking
 - A prerequisite for ENERGY STAR, LEED ratings
 - To qualify for utility rebates for energy retrofits (e.g. Houston and San Diego Gas and Electric).
 - To receive formal recognition by the city (e.g. Berkeley and San Francisco)
 - Part of a challenge or competition (e.g. Philadelphia, Denver, Arlington, Boise, Chicago, Houston, Portland, San Francisco and Seattle)

DISCUSS – Other recognition/ incentive ideas?

ENTER YOUR BUILDING TODAY!



ENERGY REDUCTION RACE

Deadline Extended to November 30th!

REDUCE ENERGY
and compete for
CASH PRIZES!

[LEARN MORE](#) [SIGN UP](#)

Meeting #2: Nov 15, 2014



DENVER
City Energy Project
A program of the City & County of Denver

Options for Efficiency Requirements

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Prescriptive

- Audits every 10 years
- Lighting must meet current code
- No T12s

Performance

- Min. ENERGY STAR score of 50
- x% reduction in EUI or GHG from previous year





ENERGY STAR PORTFOLIO MANAGER AND DATA CHALLENGES



ENERGY STAR Portfolio Manager

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- EPA's FREE on-line energy and water use tracking tool
- Register to use the site
- Hierarchy of entries (one building or a portfolio)
- Input specific metrics, per building
 - Energy use data
 - Operational /occupancy details
- Generates a report with building metrics
- Generates a nationally-recognized (1-100) energy use score for eligible building uses/sizes
- A third party can enter or view (share) metrics



ENERGY STAR Portfolio Manager

Choose Account
Name carefully - It
can't be changed.

i.e., Business Legal
Name [-City] if
more than one in
area.



A screenshot of the ENERGY STAR Portfolio Manager website. The header includes the ENERGY STAR logo, a search bar, and social media links. The main navigation bar has links for 'energy efficient products', 'energy savings at home', 'energy efficient new homes', and 'energy strategies for buildings & plants'. Below this is a breadcrumb trail: 'Home » Buildings & Plants » Owners and managers » Existing buildings » Use Portfolio Manager'. A 'portfolio manager login' link is circled in orange. The left sidebar lists various resources, including 'Learn the benefits', 'Get started', 'Use Portfolio Manager', 'Save energy', 'Find financing', 'Earn recognition', 'Communicate your success', and 'Resources for your property type'. The main content area is titled 'Use Portfolio Manager' and contains several sections: 'IN THIS SECTION' with links to 'Learn the benefits', 'Get started', 'Use Portfolio Manager', 'Save energy', 'Find financing', 'Earn recognition', 'Communicate your success', and 'Resources for your property type'; 'Use Portfolio Manager' text explaining the tool's purpose; 'Not sure if Portfolio Manager is for you? It is!' with a list of building types; 'Join the rest of the industry.' with statistics; 'It's only growing.' with a list of cities; and a 'VOTE on Portfolio Manager Enhancements!' poll. A 'SIGN UP' button is circled in orange, and a 'Current Portfolio Manager Users' login form is also circled in orange.

Data Points

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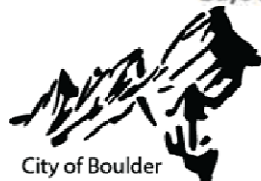
- Basic
- Characteristics of each space (vary by use)
- Utility Bill Data (12 months minimum)



PUBLIC SERVICE COMPANY OF COLORADO
P O BOX 840
DENVER, CO. 80201
(800) 895-4999 Español: (800) 687-8778

Page 1 of 2

Customer Name		Service Address		Account No.	Date Due Jun 30, 2011	Amount Due \$147.40
Account Activity						
Date of Bill	Jun 15, 2011			Previous Balance		\$129.18
Number of Payments Received	1			Total Payments		<u>(\$129.18)</u>
Number of Days in Billing Period	32			Balance Forward		\$0.00
Statement Number				+ Current Bill		<u>\$147.40</u>
Premise Number				Current Balance		\$147.40
Electric Service - Account Summary						
Invoice Number				Residential General		
Meter No				Non-Summer	489.94 kWh x 0.046040	\$22.56
Rate	R	Residential General		Summer Tier 1*	218.75 kWh x 0.046040	\$10.07
Days in Bill Period	32			Summer Tier 2*	162.31 kWh x 0.090000	\$14.61



ESPM Data Inputs Per Building

Three ways to input data

1. Manual entry for one building
2. Spreadsheet upload (multiple properties possible)
3. Web Services – exchanges data with ESPM

Free PACE
Assistance Available



ESPM Challenges

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- Energy use data can be cumbersome to obtain
- Utility metering complexities
- Not all buildings can get a 1-100 rating or score



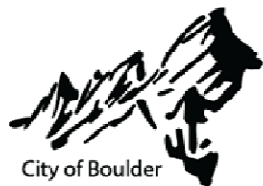
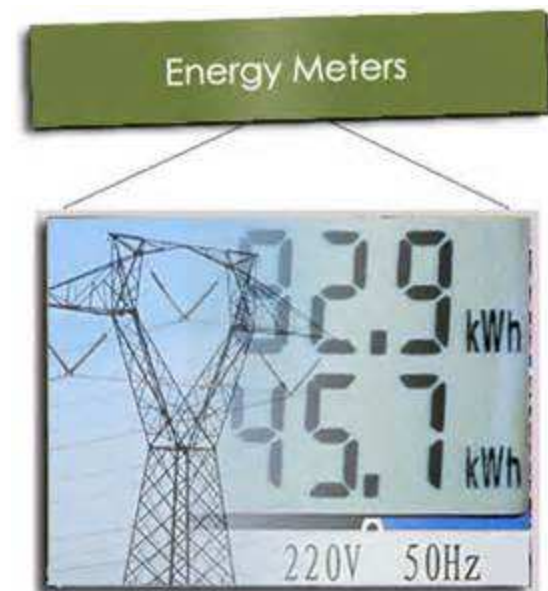
Meeting 2: Nov. 14, 2014

Whole-Building Data Access

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- Regulated Colorado utilities subject to data access and privacy rules
- Boulder's rating + reporting pilot found it challenging to obtain data
- Xcel Energy participating in DOE Better Buildings





TRAINING AND SUPPORT



Discussion: Training and Support

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What's Available Now

- EnergySmart advisors to help gather & input data
- 1:1 tutorials
- Support through EPA's Portfolio Manager & Region 8

Possible Future Resources

- Computer/Web-based support (i.e. training manuals, webinars, etc.)
- 1:1 help (phone help line, walk-in)
- Quarterly group trainings

DISCUSS – What kind of support is desired?



Discussion

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Closing Logistics

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- ☐ Meeting dates and times
- ☐ Meeting #3 Agenda
- ☐ Questions and comments





DETAILED TABLES FOR REFERENCE

City	Building Size, Type
Austin	Commercial buildings >10 years old
Boston	All public, government, multifamily, and private non-residential buildings
Cambridge	Municipal buildings over 10,000 sf, Non-residential buildings over 25,000 sf
Chicago	Municipal and commercial buildings 50,000 – 250,000 sf Residential buildings 50,000 – 250,000 sf
District of Columbia	Public/Government Buildings \geq 10,000 sf
	Non-Residential and Multi-Family \geq 50,000 sf
Minneapolis	Public/gov't buildings \geq 25,000 sf
	Non-Residential Buildings \geq 50,000 sf
NYC	Public/Government Buildings \geq 10,000 sf
	Non-Residential and Multi-Family \geq 50,000 sf
Philadelphia	Public/Gov't, Non-Residential \geq 50,000 sf
San Francisco	All private sector nonresidential buildings \geq 10,000 sf
Seattle	Multifamily and non-residential buildings \geq 20,000 sf

City	Date Effective	Phasing/Timing based on Building Type & Size Thresholds
Austin	June 2011	Commercial buildings >10 years must report annually: June 2012: ≥75,000 sf (Tier 1) June 2013: ≥30,000 and <75,000 sf (Tier 2) June 2014: ≥10,000 and <30,000 sf (Tier 3)
Boston	May 2014	All public, government, multifamily, and private non-residential buildings: June 2013: ALL Public/Gov't Buildings Sept 2014: Non Residential ≥ 50,000 sf, May 2015: Multifamily ≥50 units or 50,000 sf May 2016: Non-Residential ≥ 35,000 sf, May 2017: Multifamily ≥35 units or 35,000 sf
Cambridge	Dec 2014	Oct 2014: Municipal buildings over 10,000 sf May 2015: Non-residential buildings over 50,000 sf and Multi-family residential buildings 50+units May 2016: Non-residential buildings over 25,000 sf
Chicago	June 2014	June 1, 2014: Municipal and commercial buildings ≥ 250,000 sf June 1, 2015: Municipal and commercial buildings 50,000 – 250,000 sf June 1, 2015: Residential buildings ≥ 250,000 sf June 1, 2016: Residential buildings 50,000 – 250,000 sf
District of Columbia	April 2013	Public/Government Buildings: April 2010: ≥10,000 sf Non-Residential and Multi-Family:: April 2013: ≥ 100,000 sf April 2014: ≥ 50,000 sf
Minneapolis	May 2014	Public/gov't buildings: May 2013: ≥ 25,000 sf Non-Residential Buildings: May 2014: ≥ 100,000 sf May 2015: ≥ 50,000 sf
NYC	August 2011	Public/Government Buildings: May 2010: ≥10,000 sf Non-Residential and Multi-Family:: May 2011: ≥ 50,000 sf
Philadelphia	Oct 2013	Public/Gov't, Non-Residential: June 2014: ≥ 50,000 sf
San Francisco	Oct 2011	All private sector nonresidential buildings: Oct 2011: ≥50,000 sf Apr 2012: ≥25,000 sf Apr 2013: ≥10,000 sf
Seattle	Oct 2011	Multifamily and non-residential buildings: April 2013: ≥20,000 sf

City	Enforcement - Fines (typically 30-45 days after written notice, if not addressed)	Compliance Rate (%)
Austin	Up to \$500 (Class C misdemeanor), \$2,000 (if criminal negligence)	76% for Tier 1
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City	Disclosed to?	Building Info	EUI	GHG	Other Disclosed Info
Austin	B, T, G				Energy rating calculation disclosed to relevant parties in real estate transactions.
Boston	P, G	✓	✓	✓	Energy Star rating, and where available, water consumption per square foot
Cambridge	P, G	✓			Will disclose info online, specifics tbd
Chicago	P, G				Energy consumption and performance scores
District of Columbia	P, G	✓	✓	✓	Property id, address, owner, property type, year built, Energy Star Score, floor area, electricity use, natural gas use, district steam use, other fuel use (based on actual data available on WDC website)
Minneapolis	P, G	✓	✓	✓	water use and energy performance score, where applicable,
NYC	P, G	✓	✓	✓	Weather normalized source EUI, Indoor water intensity, Energy Star Score, floor area
Philadelphia	P, G,B,L	✓	✓		
San Francisco	P ² , G, T, B, L ³	✓	✓	✓	Aggregate data disclosed only - weather normalized source EUI, Indoor water intensity, Energy Star Score, floor area
Seattle	B, G, T, L		✓		No public disclosure required., must report EUI and EnergySTAR scores to tenants, leasees, and potential buyers.

¹ P = public, G = government, B = buyers, T = tenants, L = leasers & lenders

² Discloses summary of compliance, but not building energy use

³ CA's statewide initiative, AB 1103, requires buildings to disclose energy performance at point of transaction

City	Efficiency Requirements	Efficiency Details
Austin	Audits & mandatory upgrades for multifamily buildings, voluntary actions for commercial	The Austin City Council has set the following voluntary goals based on EnergySTAR ratings: 75 or higher - No action necessary 63-74 - Raise the score to at least 75 42-62- Raise the score by 20% Below 42- Raise the score to 50
Boston	energy audits	Buildings registering poor energy, emissions, and water performance--and not demonstrating improvement--will be required to undertake energy assessments or audits every five years.
Cambridge	Referring to net zero task force and other resources	The City is considering options to require energy performance improvement actions of buildings that do not meet a minimum level of performance
NYC	ASHRAE level II audits & RCx, public building audits & upgrades	
San Francisco	Yes, ASHRAE level I or II audits every 5 years (with retroCx as an alternative)	Building owners must file a Confirmation of Energy Audit online. Audits must be completed by a qualified Energy Professional. Large facilities and buildings with complex systems are encouraged to consider retrocommissioning as an alternative to meet the audit requirement. Audits completed since 2008 may be used.
Seattle	No	Not required, but they do provide links to rebates and assistance available for energy efficiency (http://www.seattle.gov/environment/buildings-and-energy/energy-benchmarking-and-reporting/save-energy---save-energy)